

# Snow,frost and glaciers in the world

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# Chapter 1

## User:Maxcrc/Countries without frost

### 1.0.1 COUNTRIES WITHOUT FREEZING TEMPERATURES

This is a list of countries which haven't recorded any official nor unofficial freezing air temperatures. Nevertheless, some of them, in some parts of their whole territories, have got a chance to have recorded freezing temperature at least once in modern times (1850-today) and during colder climatic periods or eras (little ice age, ice age) respectively. These percentages have been estimated.

### 1.1 AFRICA

BENIN 0%–20%  
BURKINA FASO 0%–50%  
CAPE VERDE 75%–100%  
CENTRAL AFRICAN REPUBLIC 5%–80%  
COMOROS 50%–100%  
CONGO 0%–10%  
COTE D'IVOIRE 20%–90%  
DJIBOUTI 50%–100%  
EQUATORIAL GUINEA 75%–100%  
GABON 0%–5%  
GAMBIA 0%–20%  
GHANA 0%–20%  
GUINEA 50%–100%  
GUINEA BISSAU 0%–20%  
LIBERIA 0%–60%  
MALAWI 100%  
MALI 50%–100%  
MAURITANIA 90%–100%  
MAURITIUS 0%–50%  
NIGERIA 75%–100%  
SAO TOME AND PRINCIPE 0%–60%  
SENEGAL 0%–90%

SEYCHELLES 0%–0%  
SIERRA LEONE 30%–100%  
TOGO 0%–20%

### 1.2 ASIA

BANGLADESH 20%–100%  
BAHRAIN 80%–100%  
BRUNEI 0%–30%  
CAMBODIA 5%–60%  
MALAYSIA 100%  
MALDIVES 0%–0%  
QATAR 15%–90%  
SINGAPORE 0%–0%  
TIMOR LESTE 90%–100%

### 1.3 OCEANIA

FIJI 0%–30%  
KIRIBATI 0%–0%  
MARSHALL ISLANDS 0%–0%  
MICRONESIA 0%–0%  
NAURU 0%–0%  
PALAU 0%–0%  
SAMOA 5%–60%  
SOLOMON ISLANDS 30%–90%  
TONGA 0%–30%  
TUVALU 0%–0%  
VANUATU 50%–90%

### 1.4 AMERICAS

ANTIGUA AND BARBUDA 0%–0%

BAHAMAS 0%–70%

BARBADOS 0%–0%

CUBA 95%–100%

DOMINICA 0%–40%

GRENADA 0%–0%

GUYANA 90%–100%

HAITI 90%–100%

JAMAICA 90%–100%

SAINT KITTS AND NEVIS 0%–10%

SAINT LUCIA 0%–5%

SAINT VINCENT AND THE GRENADINES  
0%–10%

SURINAME 0%–5%

TRINIDAD AND TOBAGO 0%–5%

## Chapter 2

# User:Maxcrc/Countries without snowfalls

### SNOWFALLS BY COUNTRY

Notes regarding places where snow is rare are mentioned alongside dates of those rare occurrences.

#### 2.0.1 1-COUNTRIES WHERE SNOW FALLS AT OR BELOW 1000 METERS ABOVE SEA LEVEL

### 2.1 EUROPE

- **Albania,Andorra,Austria,Belarus,Belgium,Bosnia-Herzegovina,Bulgaria,Croatia**
- **Czech Republic,Denmark,Estonia,Finland,France,Germany**
- **Gibraltar** (United Kingdom) Snowflakes were reported in February 1954 and February 1935 although without accumulation.

Some rare snowfalls were recorded before 1850 during the little ice age, the latest ones were in 1697,1779 and 1844.

- **Greece** Snow with accumulation is rare in southern Crete at sea level and very rare at Rhodes Island (1950,1987)
- **Hungary,Iceland**
- **Ireland** Snow with accumulation is surprisingly rare for its latitude at Valentia, having recorded light snow accumulation after 1987 only in January 1991 and December 2010.
- **Italy** Snow is very rare in Lampedusa Island (February 1942 with accumulation and February 1956 without accumulation) and some parts of the Sicilian eastern coast:Porto Palo saw snow with accumulation in January 1905 and on 1 January 2015, two hours into the new year,while Gela was skipped by the snow in the past event. The lowest parts of Catania downtown saw snow with accumulation in 1895,1905 and 1988.

Snow fell with accumulation in Pantelleria island in 1905,1956 and 1981 and without traces in 1949,1962,1999 and 2014.

- **Latvia,Liechtenstein,Lithuania,Luxembourg**
- **Malta** Snow was reported in Malta in few occasions: in the inland parts in January 1858 (accumulation) and March 1877 (no accumulation),also on the coast few flakes in February 1895 and January 1905. Snow was recorded and accumulated in the inland parts in March 1949 and on 1 February 1962 when flakes were also reported on the coast. Flakes were spotted in several parts of the island on 31 December 2014. No snow accumulation on the coast was recorded at least since 1800.
- **Moldova,Montenegro,Netherlands,Norway,Poland**
- **Portugal** Snow is extremely rare in the Algarve,being recorded only in February 1954 in some parts at least in the past 250 years. Snow was also recorded at Sines in 1954 and few flakes in 2006,

Snow was recorded in Lisbon in 1933,1944,and 1954,and a flurry in January 2006. In the little ice age snow was more common having been recorded in 1740,1744, on 19 February 1782 and in 1806,1811,1814,1815,1829 and 1836. Cascais and Estoril saw snow in 1954. Snow with accumulation was recorded at Setubal in january 1950 and without accumulation in january 2006, Figueira da Foz in 1960 and 2006 and at Cabo Carvoeiro in December 1944 and few flakes in January 2006. Snow is said to have fallen at the Porto Santo Island (Madeira) on 4 February 1860,although it was likely small hail. Snow is completely unheard below 500m asl in the Azores and below 800m in Madeira.

- **Republic of Macedonia,Romania,Russia,San Marino,Serbia,Slovakia,Slovenia**
- **Spain** Snow is very rare on the coast of

Andalucia,Cadiz saw snow with no countable accumulation in 1935 and few flakes in 1954,its latest accumulations might have been in December 1774 or December

1844 (this case is not clear if produced accumulation), Alicante saw its biggest snowfall in December 1572 than in January 1624 and in modern times in January 1885, December 1926 being the only modern case with accumulation on the lowest parts, December 1933 and January 1945, Almeria in January 1870, March 1883, February 1888, December 1926, December 1933 and February 1935 these 2 cases the only ones with accumulation, Malaga got snow with accumulation in 1819, 1891, 1926 and 1954, Huelva in 1881 and 1954, Melilla in 1907, 1954 and 2005, Tarifa in December 1844 and March 1993 with accumulation and only mixed with rain at Ceuta on March 1st 1993. During the little ice age, snowfalls with accumulation were recorded in Ceuta occurred in 1450 and in January 1698 (some sources give the date as 1697) and another snowfall was recorded in December 1844. In the Canary Islands in rare occasions snow has been reported around 1000m at Gran Canaria.

- Sweden, Switzerland, Ukraine, United Kingdom

## 2.2 ASIA

- **Afghanistan** Snow with accumulation is rare at Kandahar and Zaranj but it might occur, accumulations are very rare at Jalalabad and the extreme south of the country.
- **Armenia, Azerbaijan**
- **China** Snow covered the tropical city of Nanning in 1615 and 1684 and Guangzhou in 1789, 8 February 1836, 1843, 1861 and January 1893 (when it also snowed at Xiamen). Also, in 1684 the strongest cold tropical wave ever happened in the world since the end of ice age brought snow as south as the Hainan island, covering it "to the bottom". Snow covered Mengzi in December 1975.

Shantou and Huilai were covered by snow for the first and last time in 1636, while in 1619 snow reached as far south as Yangchun. Snow is unheard at lower elevation of Yun-nan below 1000m.

- **Cyprus** Snow totally covered the whole country between February 6th and the 7th 1950. Snow was also reported at sea level in February 1920, accumulating in the northern and eastern coast (Famagusta, Kyrenia and Larnaca). Previous historical snowfalls were at the begin of April 1779 when 10cm of snow covered the whole island and in January 1858.
- **Georgia**
- **Hong Kong** snowflakes were reported in few occasions on

the Victoria Peak and even in lower parts of New Territories, mostly during February 1836, January 1893 and then again on 2 February 1967, 13 December 1967, 29 January 1971 and 14 December 1975.

- **India** In India, snow falls only in elevated regions above

1,000 metres (3,281 ft). States which have elevated regions that receive snowfall are: Jammu and Kashmir, Himachal Pradesh, Uttarakhand, West Bengal, Sikkim, Arunachal Pradesh, Nagaland, Manipur and Punjab. No place in India which lies south of the Tropic of Cancer receives snow. However, in rare occasions snowflakes were reported in regions below 1000m: Dehra Dun at 682m has recorded snow on the ground in February 1814 and in February 1906, plus some sleet showers in January 1905 and snow again in January 1944. Snowflakes were also recorded in the highest parts of the city in January 1981. Pathankot in Punjab recorded its first snowfall in history in January 2012, when snow also covered many other regions in Himachal like Kangra, Panchrukhi, Maranda, Gojar, Chari for the first time since January 1964 and in the surroundings of Hoshiapur and Chandigarh.

- **Iran** snow was recorded at Ahwaz in January 1964. Rare snow also might occur at Zabol. Snow is unheard in the southern coast. An historical snowfall in November 1007 covered Abadan.
- **Iraq** snow has covered the northern Iraq in rare occasions.

In Baghdad some flurries occur sometimes: historical snowfalls were recorded in ancient times like in January 904, December 908, January 920, January 926, November 1007, in 1064 (with the Tigris frozen), in 1268, in early April 1779 (when a foot of snow is said to have covered the city), January 1834 and December 1860. Snow covered the city last time in 1909 and on January 11th 2008 first snowflakes (without accumulation) were reported in 99 years. The most famous wintry event was in January 926 when snow in Baghdad was followed by heavy frost which killed most of the date palms, fig and citrus trees. Banks of Tigris iced up at Baghdad and most of the Euphrates froze at Anbar. At Mosul The Tigris froze completely allowing pack animals to cross it. Another famous event was in November 1007 when heavy snow fell in Baghdad up to 30cm and it lasted 2 weeks on the ground, snow fell also north of Basra. In the wintry event of April 1779 snow also fell in Basra, the only time in at least 1000 years.

- **Israel** Snow has been reported below 1000m in several occasions (at Jerusalem it can snow few a times a year), and snow covered almost the whole country in

February 1950 with 10cm at Tel Aviv, its only case of snow accumulation, the former port of Jaffa (Yafo) had received a snowfall on 24 January 1825.

- **Japan** Snow with accumulation is rare in Miyazaki area and exceptionally

rare in Tanegashima Island where only traces have been recorded. Scattered flakes were also seen at Naze last time in February 1901.

- **Jordan** Snow is unheard in Aqaba.
- **Kazakhstan, Kyrgyzstan**
- **Lebanon** Snow last covered Beirut in 1853, 1920, 1942 and 1950.

and other snowfalls at sea level in the North were reported in occasions.

- **Macau\*** Snow fell in January 1893 with accumulation on the hills. This episode is unique at least in the past 200 years.
- **Pakistan** During XIX century snow was recorded at Peshawar, in XX century snow has been recorded at Rawalpindi in 1929 and 1964. Occasional few flakes were recorded at Islamabad in 1964 and 2003. Snow was said to have been recorded in the Multan area in 1055 and 1645. Snow is unheard in most of the lowest parts.
- **Mongolia, North Korea, Russia**
- **Saudi Arabia** Snow was reported in rare occasions below 1000 meters, including in Riyadh in January 1942 and January 1973 briefly covering the city gardens in some parts of the city. Snow is unheard in most of the country.
- **South Korea**
- **Syria** Snow has covered Damascus several times, so well below 1000m. The whole country has experienced at least one snowfall. Snow is very rare in Latakia (February 1920, February 1950 and January 1973 the only events in the XX century).
- **Taiwan** Snow occurs only at high elevation. An unique exception occurred in January 1893, with snowflakes seen near sea level and covering villages at middle elevation, including the hills around Taipei. In 1816 freezing rain was reported.
- **Tajikistan**

- **Turkey** Snow on the southern and southeastern coast very rare or extremely rare. Adana saw snow in 1972, Sifilke in 1974 and 1985, Marmaris in 1927 and 1987, Anamur in 1983, Damalan in 1993. Snow is extremely rare at Alanya and Iskenderun.

- **Turkmenistan, Uzbekistan**

## 2.3 AFRICA

- **Algeria** Snow covered most of the coast in few

occasions. Snow was reported in the Sahara in few occasions: in February 1979, January 1935, at El Golea in 1906, at Ouargla in February 1907, at Guerara in February 1954 and snow mixed with sleet at Biskra oasis in February 1844. Snowflakes were also seen at Djanet in January 1993. Algiers saw its biggest snowfalls in 1891, 1905, 1935, 1957 and 2005. Snow is unheard in huge parts of the desert at lower elevation.

- **Egypt** In February 1950 snow was reported at sea level and covering most the Nile Delta and even close to Cairo. At Alexandria few snowflakes were experienced during a hailstorm in that occasion and previously in February 1833 (when also snow fell at Atfeh and Rashid), January 1858, February 1929 and February 1950. Snowflakes were also recorded at El Arish in February 1920 and at Sallum in February 1934. Cairo supposedly experienced its last snowfalls on 10 January 1639 and 10 January 1855, although these episodes might have been soft hail as the bogus and false reports of snow in December 2013. However, snow falls regularly on the South Mountainous Region of Sinai, such as the city of Saint Katherine

Snow is unheard in most of the country.

- **Libya** Snow was recorded at Tripoli in 1792, 1826 (these two cases with accumulation), 1908, 1913 (these two cases without accumulation), 1915 (with accumulation), 1956 (traces) and in some parts of the city mixed with small hail in February 2012. In some occasions in the desert areas (Ghadames), although always only for a few hours. An exceptional snowfall was recorded in the desert and covered Ghadames in January 1850. Few flakes were also recorded there in February 1979. Snow was recorded at Bani Walid in 1824.

Snow was recorded at Al Bayda in February 1934 and January 1968, at Nalut in March 1949, February 1979 and December 1980, at Yefren in March 1949, February 1956, February 1979, February 1999 and February 2012. Gharyan also experienced its last snowfalls in 1979



and 2012. Snow is unheard almost everywhere at lower elevations and at medium elevations in the South.

- **Morocco** Snow was seen at sea level in few occasions like in 1885, 1891, 1907, 1926, 1935, 1954, 1957, 1993 and 2005. Tangier itself has experienced few snow showers without accumulation during 1800s ,specially in 1885.Last confirmed snow with accumulation was likely in 1450. Marrakech also experienced a light snowfall without accumulation in February 1954, for the first time in about a century. Snow was recorded at Sidi Kacem in december 1926,Marchand in December 1917 and Teflet in January 1914,Rabat experienced few scattered snowflakes in December 1917 and in January 1925

Snow is unheard in the Atlantic coast and in most of the South at low elevation.

- **South Africa** Pretoria recorded snow in September 1959 and June 1968 with accumulation in the highest parts and few flakes in 2012, a big snowfall was recorded at Kimberly in June 1876,1913,1989 and again in September 1913.

Snow was recorded at Grahamstown in May 1829,June 1845 and June 1976, in Burgersdorp in September 1853. In August 1906 an unprecedented snow was recorded in Worcester, Touws River and Langkloof. Snow was recorded at George in August 1906,July 1929 and August 1972.Snow covered Ceres in 2010. Snow was recorded at Ladysmith in September 1921 and July 1988,at Klerksdorp in July 1926,at Polokwane and Pietersburg in September 1936 , at Springbok in 1927 and 1953, at Jansenville in 1886 and 1968. Snow fell in Zululand in August 1972. In August 1973 snow fell at Bedford, Adelaide and Seymour. In August 1981 snow fell at Pofadder, Upington, Kenhardt, Keimoes and Kanoneiland.

- **Tunisia** Snow has been reported in few occasions at Tunis and Bizerte in 1854,1891,1895,1905,1923,1935,1945,1956 and 1981.

Snow accumulation in the capital Tunis was only reported in February 1854,January 1891 and traces in February 1956. in January 1905 snow was reported in the Matmata plateau ,in the region of Chott El Djerid and at Medenine. Snow was recorded at Sousse and Monastir in February 1854 and January 1891 and at Sfax last time in February 1854 . Snow is unheard at lower elevations in the extreme south of the desert,in the island of Djerba and in the eastern coast.

## 2.4 NORTH AND CENTRAL AMERICAS AND THE CARIBBEANS

- **Canada** is usually completely covered in winter,

except for the more temperate area around Vancouver, British Columbia, and occasionally southern **Alberta** or far southern **Ontario**.

- **United States of America**

Snow has covered all US states at sea level at least once, except for Hawaii, Florida and California. Florida has experienced flakes as far south as Homestead in January 1977 and as south as Fort Myers in 1899,but accumulation occurred only in the continental part or the State and the zone around Tampa. In 1774,most of Florida was covered by snow, except for the keys and the southern parts. Snow was recorded in Los Angeles in 1882,1922, 1932 (the only case with accumulation) and 1949, Santa Barbara in 1872,1939 and 1949 (last one with some accumulation), Santa Monica and Malibu in 1932 (in Santa Monica even with little accumulation),Santa Maria 1882 and 1949 (with traces of accumulation),Monterey in 1932,1937 (with accumulation) and 1962, San Diego 1849,1882,1949 and 1967 (all cases without accumulation except some traces in 1949), Phoenix 1933 and 1937 (with accumulation), Yuma December 1932 (only case in history with accumulation),1937 and 1967,in Newport Beach and Laguna Beach in 1949 with accumulation,in Oceanside in 1967 (no accumulation), Palm Springs in 1930,in Fresno in 1912,1930 and 1962, Brownsville 1835,1847,1850,1852,1866,1881,1886,1895,traces in 1949, and 2004. Snow was also recorded in the Channel Islands (California) in January 1949, with even widespread accumulation in some of them. Snow with brief accumulation was recorded at Greenland Ranch in the Death Valley in january 1922 and in the Salton depression in December 1932. In Needles,Lake Havasu City and Bullhead City snow with accumulation was recorded in January 1949 and in January 2015. Snow is totally unheard in the extreme south of Florida,in Imperial Beach and in the Farallon Islands. Note: In November 1929 snowflakes were recorded in southern Texas with 15.5C, the highest temperature at which snowflakes have been officially recorded.

- **Mexico** - Snow is common at medium-high elevations in northern states such as

**Chihuahua, Durango, Coahuila, and Nuevo Leon** also around the capital city in the mountains and volcanoes. It snows sometimes near sea level in the northern part of **Tamaulipas** during the winter months, the most recent snowfall happened on Christmas Day, 2004 (in the

border cities of **Nuevo Laredo, Tamaulipas Mexico** and **Laredo, Texas United States**). Snow was also recorded at Mexico City in february 1881,march 1891,march 1892,january 1906,december 1907,january 1920,March 1940 and January 1967, Guadalajara and Leon in february 1881 and december 1997,Zamora de Hidalgo in February 1881 and slightly in January 1967,Queretaro in february 1881,february 1886,March 1914 and slightly in january 1967 and in 1978, Ciudad Victoria in 1881,1895,1899,1925,1960,1967,1997, Mexicali in December 1932,Aguascalientes in 1881,1967,1997,Tecate in 1967 and 2008,flakes were reported at Tijuana in December 1967, snow covered Matamoros in january 1847,december 1850,January 1852 (jan 14th), February 1895 (feb 14th) and December 2004 with flakes seen as far south as Tampico in 1852 and 1895. Guanajuato,Morelia (also saw light snow in 1919),Puebla (flakes also in 1967),Oaxaca (snow also reported nearby in 1843),Ixtlan del Rio,San Cristobal de Las Casas and the Tepic's hills also seen snow for their unique time in history in february 1881. Besides 1881,the highest elevations of Chiapas also experienced snow in 1967.Pachuca de Soto saw heavy snowfalls in February 1881,February 1890 and February 1895. An exceptional snowfall on 11-13 February 1899 reached some beaches in Veracruz State and covered hills and Pachuca mountains. Snow is unheard at lower elevations of most of the country, snow line increasing at lower latitude.

- **Bermuda\*** Snowflakes were reported in March 1784 and possibly in January 1874 in the Prospect Hill.
- **Bahamas** Snowflakes were recorded at Freeport in January 1977. That episode is unique in the know history of Bahamas.
- **Cuba\*** Snow was once recorded below 1000m: it was in the Santa Clara highlands the night between 24th and 25th December 1856.Snow was also reported in january 1852 on Pan de Guajabón , at just 650m asl near Pinar del Rio, but this case is disputed since it could have been hail. Snow covered the Pico Turquino (2000m) in 1864 and in February 1900.In modern times only few flakes mixed with rain have been observed in occasions on the top of Turquino Peak.

## 2.5 SOUTH AMERICA

- **Argentina** Snow is common in the south and rare in the north. Buenos Aires itself has recorded

snowfalls in 1713,1750,1756 (accumulation),1853 (no accumulation),1912 (no accumulation),1918 (accumulation),1928 (no accumulation) and 2007 (accumulation), Rosario in 1918 and 1973, in the central areas between

Cordoba and Santa Fe province it snowed in 1922 and 2011 (in the town of Ceres that of 2011 it was the first recorded snow) ,Santa Fe and Parana in 1912,Guaaleguaychú in 1918 and 1962, Tucuman in 1920, at San Salvador de Jujuy in 1920 (with accumulation),1955,1984 , 2010 (with traces of accumulation), 2013 (accumulation). In June 1918 snow without accumulation was also recorded at Monte Caseros and Paso de los Libres.In August 1965 snow with accumulation was recorded at Obera' and Cerro Azul. Iguazu' itself experienced snowflakes mixed with rain in 1965 and 1975. No snow but only sleet was recorded at Santiago del Estero. Snow is unheard at lower elevations in the north of the country.

- **Chile** Santiago sees common snowfalls in the highest parts but rarely in its lowest parts, like the major events in 1920,1955,1967 and 2007.Minor events were recorded in 1971 and 1972. Some hill parts of Valparaiso experienced a brief snowfall in 2007, for the first time in its history.

Very light snow was also recorded at Los Angeles de Biobio in 1955 and 2007 (first accumulation in history),in Concepcion (without accumulation) in 1947 and 1955,at Temuco in 1973,1979 and 1995 (case with accumulation),at Chillan in 1973 and 1979,in Osorno and Quellon in 1974 (no accumulation),in Chaiten in 1980,in Valdivia in 1977,1992 and 1995,in Talca,Linares,Curico' and Rancagua in 1955 and 2007. Snow mixed with rain was seen in rare occasions in Ancud. Snow is unheard at lower elevations in central and northern parts of the country.

- **Brazil** - Snowfall in Brazil is rare, most recorded cases in the Southern region. Below 1000m it

has been registered in the states of **Santa Catarina** and **Rio Grande do Sul**, with snowfalls almost every year. Greatest snowfall events were in 1814,than in August 1858,August 1870,August 1879,August 1885,July 1918,July 1928,June/July 1942, than in the years 1957,1965 and 1975. Very brief snow events also have occurred in **Porto Alegre** in 1879 (with accumulation), 1910 and 1984 (no accumulation); **Curitiba** in 1912,1928,1942 and 1975,in Ijuí' in August 1965, in the Capivari Ridge in July 1858 and in 1942, Foz de Iguacu in July 1975 (no accumulation) and Pelotas in August 1885 (accumulation) and July 1984 (no accumulation).Rio Grande experienced its only snowfall in August 1885, the only case when snow reached the oceanic coast of the country. Uruguaiana experienced snow without accumulation in June 1918. Ouro Preto also supposedly recorded snow in June 1843,but it might have been a hailstorm. In the same way, in **São Paulo** the claimed snow in 1918 was indeed freezing fog. Pico da Bandeira received last snow accumulation in June 1911 and flakes in 1913. Snow is unheard in most of the country. In São Paulo state, there are reports of snow in the interior in June 1918. There

are also several reports in the interior in the 19th century. Botucatu and Bofete reported snow in July 1975.

- **Paraguay** - Snow is almost unheard in the past 200 years. Scattered snowflakes were reported at Encarnacion in July 1975 and in its surrounding in 1965 and 1973. Scattered flakes were also spotted at Pilar.

Last time snowflakes were seen at Asuncion was in June 1751.

- **Uruguay** - Rarely snowfalls had accumulation like in 1960 in Nico Perez and Battle y Ordoñez towns, 1962 in Sarandi del Yi town, Nueva Palmira and on the beach of Agraciada. Snowflakes were also seen at the north-center zone and the south ocean coast like in August 1991 at Rocha, Minas and the town of Cerro Colorado.

Flurries at Montevideo town were recorded in 1850, 1853, 1917 and 1930 without any record of snow on the ground. In July 2007 it snowed for half an hour in Nueva Palmira, and there were few flakes falling in Trarariras and other nearby towns. Nevertheless, the greatest snowfall in the history of the country was in June 1918 when most of the country was affected by huge snowfalls for the first and last time in history like in the towns of Paysandu and Tacuarembó (10cm), Salto (2cm), Fraile Muerto, Piedras Coloradas, Río Branco. Snow with accumulation was recorded also on the coast at Coronilla (7cm). In the hills snow accumulated as much as 40cm. Snow mixed with rain was recorded at Artigas and Rivera. Two weeks later in July 1918, it also snowed at Pan de Azúcar. The capital Montevideo was skipped. Nearby town of Minas instead saw snow in 1870. Other old snow events in the country were in 1817, 1870 and 1893.

## 2.6 OCEANIA

- **New Zealand** Snow has almost totally covered New Zealand in 1939, although Auckland and Wellington city

centers were spared by accumulation, which has never occurred there since the European settlement. Scattered snowflakes were seen in Wellington in 1886, 1887, 1895, 1901, 1918, 1937, 1939, 1976 (accumulation started at 100m asl), 1995 and 2011. Besides the 27 July 1939 event, Auckland also reported flurries in its hills in 1976 and 2011. In Canterbury (northeastern coast of the South island) snow fell and mostly settled in July 1867. Castlepoint and Gisborne saw snow with accumulation once in July 1939, Wanganui in 1974 and 2011, New Plymouth in 1939 with accumulation and

in 2011 without accumulation. Nelson only saw flakes without accumulation in rare occasions like in 1939. The western coast sees virtual no snow accumulation at sea level even in the South Island from Westport to Hokitika, with mainly brief flurries of sleet, the main snow events were in 1872, 1910, 1931, 1961 and 2011. In the 1872 event, snow fell at Pakawau Beach too. Snow was reported on the Tangihua Range in Northland in 1868, 1904, 1939, 1976 and 2011. Chatam Island also experiences very rare snowfalls. Snow is unheard in the northwestern coast and at lower elevations in the north of Northern Island.

- **Australia**

Snow has covered sea-level Australia only in **Tasmania** since 1850. (1951, 1986) Hobart has experienced major snowfalls with accumulation in 1849, 1868, 1882, 1894, 1951 and 1986. In the rest of Australia it snowed without sticking to the ground in Melbourne in 1882, 1951 and 1986, in some inland quarters of Sydney in 1986, in some parts of **Adelaide** in 1951, at Esperance in 1976 and at Albany in 1910. In Western Australia, snow occasionally falls in the South West and Great Southern region, most notably in July 1956 when the Perth Hills received snowfall. An anecdotal report claims that snow could be seen from the highest skyscrapers in Perth, but melted before hitting the ground. 8cm of snow has accumulated in Greenbushes, near Bridgetown in 1932. Most recently, snow fell and accumulated at Jerramungup and Ongerup in 2003. In the first part of the XIX century, out the 4 reports of snow in **Sydney** in 1836, only one was genuine snow: between 8:15am and 8:45am of June 28th 1836, the other 3 cases were small hail, while Melbourne was blanketed by snow on 31 August 1849. Snow has been recorded in **Toowoomba** in **Queensland**, although this is extremely rare. Snow has also been reported in Northern Territory in the **Ayers Rock** in July 1997. Snow is unheard of in most of the country.

### 2.6.1 2-COUNTRIES WHERE SNOW FALLS ABOVE 1000 METERS ABOVE SEA LEVEL

## 2.7 ASIA

- **Bhutan** Snow falls occasionally in Thimpu. In Punakha snow fell few times during the XIX century, although there are no reports in modern times.

Snow is unheard at lower elevations.

- **Indonesia** - Snowfalls only occur on the highest mountains of Irian Jaya above 4000m.

- **Laos\*** — Snow fell on the top of tallest mountains during the 19th century. It hasn't occurred in the past decades.

In the first half of the 19th century snow is said to have fallen also at Phongsaly.

- **Malaysia** Snow may fall occasionally only close to the **Mount Kinabalu** even briefly sticking to the ground.
- **Myanmar** Snow only falls at higher elevations in the north above 3500m.
- **Nepal** Snow has been reported even in the capital

Kathmandu in January 1944 and a brief flurry in February 2007. It was common until the first half of the XIX century. Snow is common at high elevations and unheard at lower elevations.

- **Oman** — Snow occasionally falls above 2000m.
- **Philippines\*** Snow fell on the top of Mount Pulag in occasions during the little ice age until the end the XIX century, but the event has not happened in the past decades.
- **United Arab Emirates** — Snow with accumulation was reported above

1,500 metres (4,921 ft) in December 2004 and in January 2009.

- **Vietnam** Snow may fall at elevations as low as 1300-1400m in the North. It's unheard anywhere else.
- **Yemen** — Snow falls in rare occasions on the top of most elevated mountains above 3000m.

## 2.8 AFRICA

- **Lesotho**
- **Swaziland** Snow was reported in the capital Mbabane around 1000m a.s.l. in 1918, 1968 and 1997.

It's a rare event and only occurs in the highest parts of the country.

- **Botswana\*** There have been few reports of scattered snowflakes falling in southern parts of Kalahari decades ago. It hasn't happened for long time.

- **Rwanda** Snow might fall above 4000m
- **Ethiopia** Snow rarely falls above 4000m

- **Eritrea\*** Snow has been recorded in the XIX century on the top of the tallest peak.

Snow has not fallen for the last several decades.

- **Madagascar** Snow has been recorded in occasions on the tops of the Andringitra Massif above 2400m. In the past, as late as the first decades of the XX century, snow also was believed to have fallen on the Tsaratanana Massif, but it hasn't happened in the past decades.
- **Malawi** Snow has been recorded in rare occasions on the top of the highest peak, Mt. Mulanje, most notably in June 1954.
- **Mozambique\*** Snow was said to have covered the Mount Namuli in occasions during the XIX century. There are no reports of snow in the XX century.
- **Namibia** Snow has been reported in the south, including around the capital Windhoek mixed with rain (1891, 1892, 1964, 1984, 1994).

Snow has settle to the ground at elevations as low as 1300m in the south. Snow fell at Aus in July 1963, June 1964 and July 2012, in Helmeringhausen in June 1964 and July 2012 and in Gochas in June 1964. It's unheard in most of the country.

- **Kenya** Snow might fall above 4000m
- **Tanzania** Snow might fall above 4000m
- **Uganda** Snow might fall above 4000m
- **Democratic Republic of the Congo** Snow might fall above 4000m
- **Cameroon** Snow falls on the highest peak above 4000m but in certain occasion sleet and snowflakes have been recorded at lower elevations, being the most important case recorded in January 1892, when snowflakes were spotted around 3000m.
- **Chad** Snow occasionally falls in the highest parts of the Tibesti above 3000m
- **Sudan\*** Snow had been reported in rare occasions in the past on the top of the Jabal Murrah. It hasn't happened in the past decades there not anywhere else in the country.



- **Zimbabwe\*** There are unofficial reports of very brief snowfalls on the Inyangani at 2500m a.s.l. Snow was said to be common during the XIX century, being the last snowfall with accumulation recorded in August 1935.
- **Cape Verde** Snowflakes are reported sometimes on the top of Monte Fogo, but they hardly ever stick to the ground.

## 2.9 NORTH AND CENTRAL AMERICAS AND THE CARIBBEANS

- **Costa Rica\*** Snow was recorded in the XIX century on Chirripo, Kalmuk and A La

Muerte Mountains (Talamanca Range) and even in the Irazu Volcano, but there have been no cases of snow in the country in the past 100 years or so. Last documented case of snow was in January 1897 on the highest parts of the Talamanca Range.

- **Dominican Republic** Snow can fall in the highest peaks of the Valle Nuevo around 3000m but it is becoming a rare event and accumulation almost no longer occurs.
- **Guatemala** Snow may fall above 4000m on at the top of the Tajumulco Volcano and in rare occasions between 3700m and 4000m.

Snow was recorded on the volcanoes Fuego and Acate-nango and in the village of Ixchiguán (3200m) in January 1967, January 2007 and January 2013. Snow was recorded in the Santa Maria Volcano in January 2002. Snow was recorded last time in the Agua Volcano in January 1967, in the Atitlan Volcano in February 1936, in Chichoy Lake in January 1938. A spectacular and unmatched snowstorm swept the country in February 1881 with snow recorded above 2200m, including in the city of Quetzaltenango.

- **United States - Hawaii** snow is only possible on the 3 highest peaks (extremely exceptionally on the Hualalai too) and at elevations above 2700 m, the lowest

elevation where flakes have been recorded is 2250m. Last snowfalls in the 4th tallest peak, Hualalai, occurred in 1832, 1862, 1911 and 1937.

## 2.10 SOUTH AMERICA

- **Colombia** Snow only falls at very high elevations, minimum elevations varies from 3500m to 4200m.
- **Peru** Snow has fallen at elevations as low as 3200m-3300m. Cuzco itself has experienced snowfalls in July 1911 and July 1968.
- **Ecuador** in the night of July 24th 1892 snow fell at altitude as low as 2900m. Generally snow in modern times falls only above 3800m-4000m.
- **Bolivia** Snow can fall at high elevations and in the south as low as 1500m, in the Tarija area in 1920 (also in the city), 1995, September 2005 (few flakes also in the city) and in 2010. La Paz receives some snow in its medium-highest parts (above 3600m) about once every 10 years. Snow settled in the central part of the city mainly in 1916, 1928 and 1945, lately in 1995 and 2007. Rare snowflakes might fall at Sucre like in August 1968, August 1971 and July 1983 without accumulation.

Minimum snowline varies from 1700m in the south-east to 3500m to the northwest. In July 2010 a thin layer of snow stuck onto the Sarrarenda Hill (above the town of Camiri) at just 1400m asl, virtually the lowest elevation where snow has ever stuck in Bolivia.

- **Venezuela** Snow has been reported as low as 3500m a.s.l., including in inhabited settlements around Apartaderos

## 2.11 OCEANIA

- **Papua New Guinea** Snow falls only on the highest peaks, above 13000ft (4000 m), including Mt Wilhelm. The

snow is not permanent throughout the year.

- \* Denotes countries where snow is near extinction (recorded during the end of the Little Ice Age, listed both above and down)

### 2.11.1 3-COUNTRIES WHERE SNOW NEVER FALLS (only independent countries listed)

## 2.12 ASIA

- **Bahrain** Snow is almost impossible in modern climatic era, but maybe possible during the ice age.

- **Bangladesh** Snow is impossible in modern climatic era, almost impossible during the ice age.
- **Brunei** Snow is impossible in any climatic era.
- **Cambodia** Snow is impossible in modern climatic era, very unlikely but not completely impossible in the ice age in the Mount Aoral.
- **Kuwait** Snow has never been reported not even during the little ice age, although it's not impossible it might occur in a exceptional event. Snow is likely to have fallen during the ice age.
- **Laos\*** Snow was recorded at high elevations during the little ice age. It might occur again in an exceptional event.
- **Macau\*** Snow was recorded during the little ice age. It might occur again in an exceptional event.
- **Maldives** Snow is impossible in any climatic era.
- **Philippines\*** Snow was recorded during the little ice age on the Mount Pulog. It might occur again in an exceptional event.
- **Qatar** Snow is impossible in modern climatic era, unlikely during the ice age.
- **Singapore** Snow is impossible in any climatic era.
- **Sri Lanka** Snow is impossible in modern climatic era, although it might have occurred in extreme rare occasions during the ice age on the Mount Pidurutalagala.
- **Thailand** Snow has never been reported not even during the little ice age and it's extremely unlikely to occur, although it has probably fallen during the ice age at elevations of 2400-2500m in the North-west.
- **Timor Leste** Snow is almost impossible in modern climatic era but it has probably occurred sporadically during the ice age on the top of Mount Ramelau.
- **Benin** Snow is impossible in any climatic era.
- **Botswana\*** Scattered flakes were reported during the little ice age and they might occur again only in a really exceptional event, snow probably fell sporadically during the ice age in the southern parts of the country.
- **Burkina Faso** Snow is impossible in modern climatic era and almost impossible during the ice age.
- **Burundi** Snow is impossible in modern climatic era, it might have fallen in really rare occasions during the ice age at highest elevations above 2500m.
- **Central African Republic** Snow is impossible in any climatic era.
- **Comoros** Snow is impossible in modern climatic era, but it might have occurred in rare occasions during the ice age on the top of Mount Le Kartala.
- **Congo Brazzaville** Snow is impossible in any climatic era.
- **Cote d'Ivoire** Snow is impossible in modern climatic era and extremely unlikely but not impossible in the ice age on the top of Mount Richard-Molard
- **Djibouti** Snow is impossible in modern climatic era and unlikely but not impossible in the ice age on the top of Mount Mousa Ali.
- **Equatorial Guinea** Snow is almost impossible in modern climatic era but it has likely fallen during the ice age at the highest elevations near the Santa Isabel Peak.
- **Eritrea \*** Snow was recorded on the Emba Soira in the little ice age, it might occur again only in a real exceptional event.
- **Gabon** Snow is impossible in any climatic era.
- **Gambia** Snow is impossible in any climatic era.
- **Ghana** Snow is impossible in any climatic era.

## 2.13 AFRICA

- **Angola** Snow is extremely unlikely to occur since it has not recorded even during the little ice age, although it has surely fallen during the ice age at the highest elevations above 2000-2500m.
- **Guinea** Snow is impossible in modern climatic era and extremely unlikely but not impossible in the ice age on the top of Mount Richard-Molard.
- **Guinea Bissau** Snow is impossible in any climatic era.

- **Liberia** Snow is impossible in modern era and almost impossible in the ice age at the highest elevations.
- **Mali** Snow is impossible in modern era and extremely unlikely in the ice age on the Hombori Tondo.
- **Mauritius** Snow is impossible in modern era and very unlikely in the ice age on the top of Piton de la Petite Rivière Noire.
- **Mauritania** Snow is impossible in modern era, although there is a chance it might have occurred in the ice age on the top of the Kediet ej Jill.
- **Mozambique\*** Snow was recorded in rare occasions in the little ice age on the top of Mount Binga. It's extremely unlikely to occur again.
- **Niger** Snow has never been recorded in modern era not even during the little ice age and it's extremely unlikely to occur on the Massif of Air. Snow has likely fallen there during the ice age.
- **Nigeria** Snow is almost impossible in modern era , but it could have occurred during the ice age in the highest elevations above 2000-2200m.
- **Sao Tome and Principe** Snow is impossible in modern era and almost impossible in the ice age at the highest elevations.
- **Senegal** Snow is impossible in any climatic era.
- **Seychelles** Snow is impossible in any climatic era.
- **Sierra Leone** Snow is impossible in modern era , but it could have occurred during the ice age on the top of Mount Bintumani.
- **Somalia** Snow is impossible in modern era , but it could have occurred during the ice age at elevations above 2000m.
- **Southern Sudan** Snow is impossible in modern era, but it has probably occurred in the ice age on the top of Mount Kinyeti.
- **Sudan \*** Snow was recorded during the little ice age on the Jebel Marra. Only in a real exceptional event it might occur again.
- **Togo** Snow is impossible in any climatic era.
- **Zambia** Snow is impossible in modern era, but it might have occurred in the ice age at the highest elevations above 2000m of the Mafinga Hills.

## 2.14 NORTH AND CENTRAL AMERICAS AND THE CARIBBEANS

- **Antigua and Barbuda** Snow is impossible in any climatic era.
- **Barbados** Snow is impossible in any climatic era.
- **Belize** Snow is impossible in modern era, although it might have occurred in very rare occasions in the ice age above 1000m on the Doyle's Delight.
- **Costa Rica\*** Snow was relatively common during the little ice age at elevations above 3400m. It might occur again only in a real exceptional event.
- **Cuba\*** Snow was recorded in the little ice age in rare occasions at 1000m in the west and at 2000m in the east of the country. It's unlikely to occur again.
- **Dominica** Snow is impossible in modern era and very unlikely in the ice age on the top of Mount Diablotin.
- **El Salvador** Snow is almost impossible in modern era, not having been recorded even during the little ice age, but it has likely occurred during the ice age at the highest elevations near El Pital.
- **Grenada** Snow is impossible in any climatic era.
- **Haiti** Snow has never been recorded not even during the little ice age and it's very unlikely to occur, but it has surely fallen during the ice age at the highest elevations.
- **Honduras** Snow has never been recorded not even during the little ice age and it's very unlikely to occur, but it has surely fallen during the ice age at the highest elevations.
- **Jamaica** Snow is impossible in modern climatic era, but it has probably fallen during the ice age on the top of Blue Mountain Peak.
- **Nicaragua** Snow is impossible in modern climatic era, but it might have occurred during the ice age on the top of Mount Mogoton.
- **Panama** Snow has not been recorded in modern times (it has been confused with hail and graupeln), it might fall only in a real exceptional event on the top of Volcan Baru. It has surely fallen during the ice age.

- **Saint Kitts and Nevis** Snow is impossible in modern climatic era and almost impossible in the ice age.
- **Santa Lucia** Snow is impossible in modern climatic era and almost impossible in the ice age.
- **Saint Vincent and the Grenadines** Snow is impossible in modern climatic era and almost impossible in the ice age.
- **Trinidad and Tobago** Snow is impossible in any climatic era.

## 2.15 SOUTH AMERICA

- **Guyana** Snow is virtually impossible in modern climatic era, but it has probably occurred during the ice age on the top of Mount Roraima.
- **Suriname** Snow is impossible in any climatic era.

## 2.16 OCEANIA

- **Fiji** Snow is impossible in modern climatic era and almost impossible in the ice age.
- **Kiribati** Snow is impossible in any climatic era.
- **Marshall Islands** Snow is impossible in any climatic era.
- **Micronesia** Snow is impossible in any climatic era.
- **Nauru** Snow is impossible in any climatic era.
- **Palau** Snow is impossible in any climatic era.
- **Samoa** Snow is impossible in modern climatic era and unlikely but not impossible to have occurred during the ice age on the top of Mount Silisili.
- **Solomon Islands** Snow is impossible in modern climatic era but it might have fallen during the ice age on the top of Mount Popomanaseu.
- **Tonga** Snow is impossible in modern climatic era and almost impossible during the ice age.
- **Tuvalu** Snow is impossible in any climatic era.
- **Vanuatu** Snow is impossible in modern climatic era and unlikely but not impossible to have occurred during the ice age on the top of Mount Tabwe-masana.

## 4-NOTE:SOME WRONG NEWS OF SNOW ON THE WEB

- **Jamaica** A hailstorm was recorded in 1823 at Annotto Bay and it was wrongly stated it was snow, which is impossible.
- **Costa Rica** Lots of reports of snow at higher altitudes are nothing more than ice pellets or snow grains, not snow.
- **El Salvador** Reports of snow at high elevation of El Pital are hail confused with snow.
- **Panama** Lots of reports of snow at higher altitudes are nothing more than ice pellets or snow grains, not snow.
- **Honduras** A hailstorm recorded in December 1848 at Tegucigalpa was wrongly described as a snowstorm.
- **Thailand** A hailstorm recorded in the northern province of Chiang Mai in January 1955 was wrongly depicted as a snowstorm.
- **Somalia** Few years ago, a report of "snow" was claimed to have fallen in one of the hottest days of the year in which freezing level was almost at 6000m. Snow in Somalia is completely impossible anytime of the year in modern times, let alone in early June, during the peak of the hot season. It was a hailstorm caused by a turbulence in atmosphere.
- **Uruguay** Newspapers reports snow at the seaside of Rio de la Plata in the Montevideo's district of Carrasco on June 26, 1980. The Uruguayan meteorological service says that it was actually soft hail. The photographs show it was clearly hail not snow.
- **Egypt** A hailstorm in 13 December 2013 at Cairo was wrongly described by the media as a snowstorm. Most pictures published by media showed hail, while those that showed real snow, were actually taken in Jordan, Turkey, and the Sinai Peninsula; there were even pictures of snow-covered pyramids and sphinxes that were taken in a thematic park in Japan.



## **Chapter 3**

**User:Maxcrc/Glaciers by country**

## Chapter 4

# GLACIERS BY COUNTRY

### 4.1 1-COUNTRIES GLACIERS

#### WITH

- Iran
- Japan
- Jordan
- Kazakhstan
- Kyrgyzstan
- Pakistan
- Mongolia
- Myanmar
- Nepal
- Russia (Asian)
- Tajikistan
- Turkey
- Uzbekistan

#### 4.1.1 EUROPE

- Albania
- Austria
- Bulgaria \*
- France
- Germany
- Iceland
- Italy
- Montenegro
- Norway
- Russia (European)
- Slovakia
- Slovenia \*
- Spain
- Sweden
- Switzerland

#### 4.1.2 ASIA

- Afghanistan
- Armenia
- Azerbaijan
- Bhutan
- China
- Georgia
- India

#### 4.1.3 AFRICA

- Kenya
- Tanzania
- Uganda
- Democratic Republic of the Congo

#### 4.1.4 NORTH AMERICA

- Canada
- United States of America
- Mexico

### 4.1.5 SOUTH AMERICA

- Argentina
- Chile
- Colombia
- Ecuador
- Peru
- Venezuela

### 4.1.6 OCEANIA

- New Zealand
- Indonesia (West Papua)
- =Last glacier(s) endangered. In process to become snowfield(s).

## 4.2 2-COUNTRIES WITHOUT GLACIERS BUT WITH PERMANENT SNOW PATCHES

### 4.2.1 EUROPE

- Andorra \*\*
- Bosnia and Herzegovina
- Finland
- Poland

### 4.2.2 ASIA

- Lebanon
- North Korea \*\*

### 4.2.3 AFRICA

- Morocco \*\*

### 4.2.4 NORTH AMERICA

none

### 4.2.5 SOUTH AMERICA

- Bolivia

### 4.2.6 OCEANIA

none

- • = Last permanent snowpatches (with firn/neve) might have disappeared and are becoming non permanent or semi permanent snowpatches (not surviving every season).

## 4.3 3-COUNTRIES WHICH MIGHT HOST SEMIPERMANENT SEASONAL SNOWPATCHES

- Greece \*\*\*
- Kosovo (Serbia) \*\*\*
- Liechtenstein (?) \*\*\*
- Macedonia \*\*\*
- United Kingdom
- • • Lasting Seasonal snow is becoming a rare event

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